**Grade 8 – Science Midterm Exam Study Guide**

Know the definition of the vocabulary words listed on pages 6, 13, 404, 415, 434, 441, 448, 464, 472, and 492.

**Locate past quizzes and tests and study them in addition to the review questions at the end of each chapter.**

Use your **class notes** and the textbook to complete the following statements regarding the key concepts in each of the following chapters:

1. **Metric System – *you need to refer to your notes and handouts regarding the metric system***.

* Define: length, volume and mass
* Identify the numerical value of the following prefixes: kilo-; centi- and milli- [***Remember*** *that there are 3 other prefixes that exist but are rarely used: hecto- (100x), deca- (10x) and deci- (1/10th).]*
* Be able to convert: grams to kilograms; millimeter to kilometer; kilogram to milligram; and other combinations
* Identify the SI units of:
  + **Length** – meter (base unit); kilometer, centimeter and millimeter.
  + **Volume** – liter (base unit); milliliter and cubic centimeter (cm3)
  + **Mass** – gram (base unit); kilogram, centigram and milligram
* Identify the methods by which these measurements are taken:
  + Meter stick
  + Graduated cylinder
  + Triple-beam balance

1. **Chapter 1 – The Nature of Science pp. 6-23**

* Describe what skills and tools are used in science.
* Examine the steps used to solve a problem in a scientific way.
* Explain how a well-designed investigation is developed. (Include independent and dependent variables and constants in your explanation.)
* Read and study the ***Summary*** items on pages 11 and 23
* Read and study the ***Reviewing Main Ideas*** section on page 31.

1. **Chapter 14 – Inside the Atom pp. 402-431**

* Explain how scientists discovered subatomic particles.
* Explain how today’s model of the atom developed. Include the discoveries of Dalton, Crooke, and Rutherford.
* Describe the structure of the nuclear atom.
* Explain that all matter is made up of atoms.
* Describe the process of radioactive decay.
* Explain what is meant by half-life.
* Describe how radioactive isotopes are used.
* Read and study the ***Summary*** items on pages 413 and 423
* Read and study the ***Reviewing Main Ideas*** section on page 427.

1. **Chapter 15 – The Periodic Table pp. 432-461**

* Describe the history of the periodic table.
* Interpret an element key.
* Explain how the periodic table is organized.
* Recognize the properties of representative elements.
* Identify uses for the representative elements
* Classify elements into groups based on similar properties.
* Read and study the ***Summary*** items on pages 440 and 447
* Read and study the ***Reviewing Main Ideas*** section on page 457.

1. **Chapter 16 – Atomic Structure and Chemical Bonds pp 462-489**

* Identify how electrons are arranged in an atom.
* Compare the relative amounts of energy of electrons in an atom.
* Compare how the arrangement of electrons in an atom is related to its place in the periodic table.
* Compare and contrast ionic and covalent bonds.
* Distinguish between compounds and molecules.
* Identify the differences between polar and nonpolar covalent bonds.
* Interpret chemical shorthand (NaSO4)
* Read and study the ***Summary*** items on pages 471 and 480.
* Read and study the ***Reviewing Main Ideas*** section on page 485.

1. **Chapter 17 - Chemical Reactions pp 490-501**

* Determine whether or not a chemical reaction is occurring.
* Determine how to read a chemical equation
* Understand how to balance a chemical equation.
* Explain the Law of Conservation of Mass.
* Read and study the ***Summary*** items on page 501.
* Read and study the ***Reviewing Main Ideas*** section on page 513, section 1 only.

**When in doubt about what to study, study your notes!!**